Exhibit 4

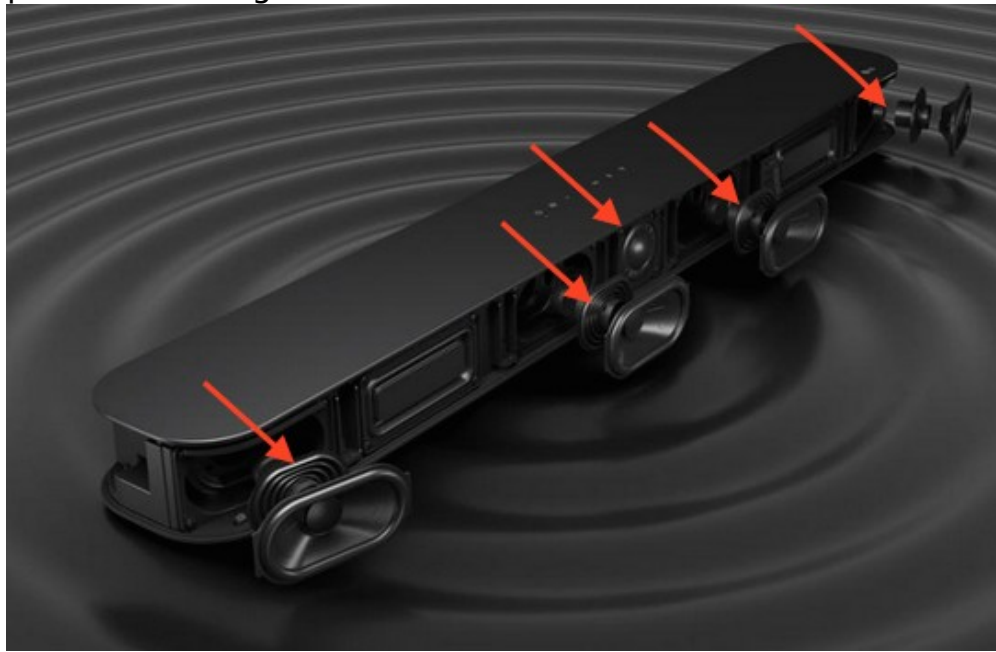| LG – Soundbar (See Accused Product List at end of chart for soundbar models) Infringement of the '430 patent	
Claim #2	**Evidence**
2. A speaker system for producing localized regions of sound comprising:	The LG soundbar is a speaker system for producing localized regions of sound. For example, the Éclair SE6 soundbar produces a surround sound effect. The surround sound effect causes a listener facing the soundbar to perceive that sound emanating from the soundbar is originating at a location behind and to the left of the listener, referred to as surround left, and at another location behind and to the right of the listener, referred to as surround right. Cinema Sound Solution Transform Your Room Add a new dimension of sound that makes you feel like youre in the middle of the action with Dolby Atmos* and DTS:X** in order to bring realistic spatial sound to your roomIt surrounds you on all sides letting feel the immersive sound with every scene. [2]

1

	[2]
a multiplicity of audio frequency speakers;	The LG soundbar includes a multiplicity of audio frequency speakers. For example, the Éclair SE6 soundbar includes five audio speakers positioned along a front face of the soundbar. [2]

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SPEAKERS ←	
Front	20W x 2
Center	20W x 3
3.0 Ch	Yes

[2]

| at least one defined sound target spaced from each of the speakers of the multiplicity of speakers, wherein each speaker has a means for applying a time varying audio drive voltage which is substantially identical, except that each audio drive voltage is offset in time by an amount which is related to the distance between each speaker and the defined sound target, so that substantially identical sound from each speaker reaches the sound target at the same time; | The LG soundbar has at least one defined sound target spaced from each of the speakers of the multiplicity of speakers. Each speaker has a means for applying a time varying audio drive voltage which is substantially identical, except that each audio drive voltage is offset in time by an amount which is related to the distance between each speaker and the defined sound target. So that substantially identical sound from each speaker reaches the sound target at the same time.

For example, each of the speakers is connected to an audio amplifier. A surround left channel signal is provided to each speaker via the speaker's respective amplifier. The surround left channel is delayed slightly for speakers on the listener's left compared to speakers on the listener's right. The amount of delay is such that sound waves emanating from each of the speakers reaches the surround left location at the same time, thereby interfering constructively to produce a resultant sound wave having a peak spatial amplitude at the surround left location. When this wave reflects back to the listener, the listener perceives that the sound originated from the surround left location. [A] |

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The SE6 is a 3.0-channel speaker with five drivers and four passive radiators. LG doesn't specify the driver size, but there are four woofers and a single tweeter. The two outer woofers are angled slightly to the left and right, and the two center woofers and tweeter fire straight ahead. The soundbar supports Dolby Atmos and DTS:X spatial audio, though with no upward-firing drivers or rear satellites it relies almost entirely on horizontal acoustic reflection to provide any surround effect.

[3]

According to the specification the term: "substantially identical" means:

"It should be understood that when, a means for applying a time varying audio drive voltage, i.e. the signal used to drive individual speakers is described as substantially identical, the signals are defined as being substantially identical, although they vary in amplitude. The term, substantially identical, means capable of constructive interference when used in the sound system **36** of this invention." [col.12 lines 18-24]

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at least a first defined sound target and a second defined sound target, the second sound target being spaced from the first sound target, and the first sound target and the second sound target being spaced from each of the speakers of the multiplicity of speakers,

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The LG soundbar has at least a first defined sound target and a second defined sound target. The second sound target is spaced from the first sound target. The first sound target and the second sound target are spaced from each of the speakers.

For example, the surround left location is at a rear position on a left-side wall of a nominally sized room e.g. 10 ft x 15 ft. The surround right location is at a rear position on the right-side wall of the room. Additionally, the soundbars calibrate for optimal performance depending on the dimensions of the room.

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	The LG SoundBar app (available for Android and iOS) is separate from the LG ThinQ smart home app and lets you configure the soundbar, update its firmware, adjust settings, and use the AI Room Calibration feature. Room calibration uses the SE6's built-in microphones to analyze the acoustics of the room and adjust the speaker's audio balance to produce the best effect. For other audio tweaks, the app provides seven different EQ presets along with an AI Sound Pro mode that automatically changes the balance based on what you're listening to. Last, you can adjust bass and treble levels, and toggle a night mode that reduces the frequencies that can be heard through walls. There's no custom EQ, however. [3]
and wherein the means for applying a time varying audio drive voltage comprises: at least a first audio source which is offset in time by an amount which is related to the distance between each speaker and the first defined sound target; and	The means for applying a time varying audio drive voltage comprises at least a first audio source which is offset in time by an amount which is related to the distance between each speaker and the first defined sound target. For example, a delay is added to the surround left channel (e.g. first audio source) before it is applied to a speaker on the left-side of the soundbar, as viewed from the listener's position. The delay relates to the distance between the speaker and the surround left location in the nominally sized room, whereby the speaker closest to the surround left location has the most delay. This enables the soundbar to produce audio with a wider soundstage. [A][H] **Smart Up-Mixer** **Upgrade Your Sound** Create a wider sound stage to fill your room for a richer immersion of surround sound*. Leverage all speakers to convert 2-channel audio into a multi-channel experience. [2]
at least a second audio source which is offset in time by an	The LG soundbar includes at least a second audio source which is offset in time by an amount which is related to the distance

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amount which is related to the distance between each speaker and the second defined sound target wherein a sum of the first audio source which is offset in time and the second audio source which is offset in time is used to produce the time varying audio drive voltage so that substantially identical sound from the first audio source signal reaches the first sound target at the same time, and substantially identical sound from the second audio source signal reaches the second target at the same time.

between each speaker and the second defined sound target. The sum of the first audio source and the second audio source is used to produce the time varying audio drive voltage. Substantially identical sound from the first audio source signal reaches the first sound target at the same time, and substantially identical sound from the second audio source signal reaches the second target at the same time.

For example, a delay is added to the surround right channel (e.g. second audio source) before it is applied to a speaker on the right-side of the soundbar. The delay relates to the distance between the speaker and the surround right location, whereby the speaker closest to the surround right location has the most delay. Each speaker is provided, via its amplifier, with a surround left channel signal and a surround right channel signal, each signal having a respective delay. The signals are added together before being input to the respective amplifier. Consequently, each speaker emits a sound wave comprising audio from the surround left channel and from the surround right channel, the audio from each channel having an appropriate amount of delay such that the surround left audio reaches the surround left location at the same time as the surround right audio reaches the surround right location. [A][H]
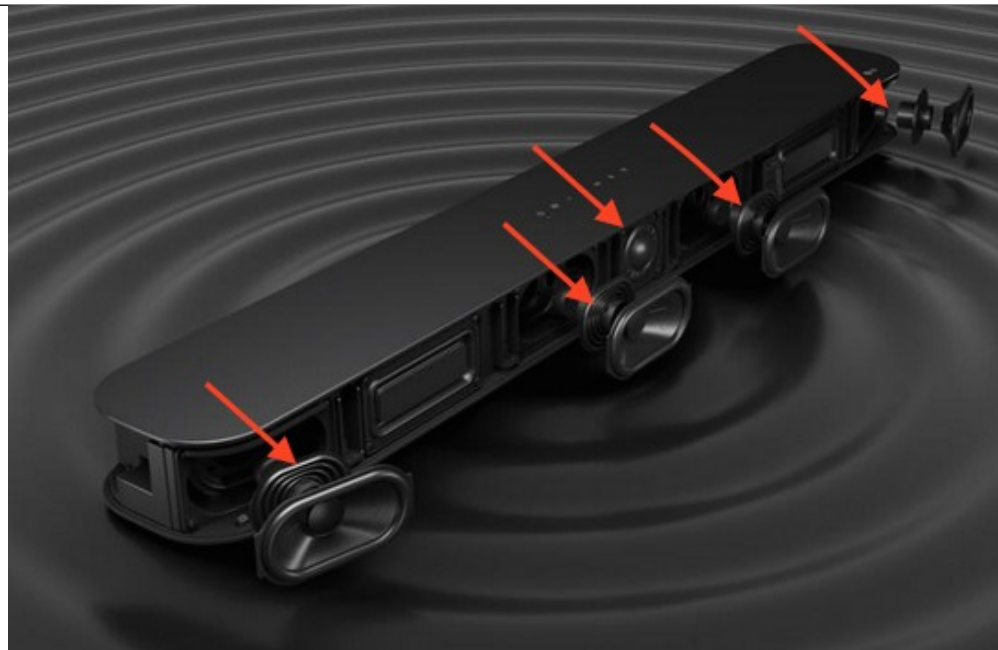
Cinema Sound Solution

Transform Your Room

Add a new dimension of sound that makes you feel like youre in the middle of the action with Dolby Atmos* and DTS:X** in order to bring realistic spatial sound to your roomIt surrounds you on all sides letting feel the immersive sound with every scene.

[2]

LG – Soundbar

(See Accused Product List at end of chart for soundbar models) **Infringement of the '430 patent**	
Claim #3	**Evidence**
3. A speaker system for producing localized regions of sound comprising:	The LG soundbar is speaker a system for producing localized regions of sound. For example, the Éclair SE6 soundbar produces a surround sound effect. The surround sound effect causes a listener facing the soundbar to perceive that sound emanating from the soundbar is originating at a location behind and to the left of the listener, referred to as surround left, and at another location behind and to the right of the listener, referred to as surround right. Cinema Sound Solution Transform Your Room Add a new dimension of sound that makes you feel like youre in the middle of the action with Dolby Atmos* and DTS:X** in order to bring realistic spatial sound to your roomIt surrounds you on all sides letting feel the immersive sound with every scene. [2]
a multiplicity of audio frequency speakers;	The LG soundbar includes a multiplicity of audio frequency speakers. For example, the Éclair SE6 soundbar includes five audio speakers positioned along a front face of the soundbar.

[2]

SPEAKERS	
Front	20W x 2
Center	20W x 3
3.0 Ch	Yes

[2]

at least one defined sound target spaced from each of the speakers of the multiplicity of speakers, wherein each speaker has a means for applying a time varying audio drive voltage which is substantially identical, except that each audio drive voltage is offset in time by an amount which is related to the distance between each speaker and the defined	The LG soundbar has at least one defined sound target spaced from each of the speakers of the multiplicity of speakers. Each speaker has a means for applying a time varying audio drive voltage which is substantially identical, except that each audio drive voltage is offset in time by an amount which is related to the distance between each speaker and the defined sound target. So that substantially identical sound from each speaker reaches the sound target at the same time. For example, each of the speakers is connected to an audio amplifier. A surround left channel signal is provided to each speaker

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sound target, so that substantially identical sound from each speaker reaches the sound target at the same time; and	via the speaker's respective amplifier. The surround left channel is delayed slightly for speakers on the listener's left compared to speakers on the listener's right. The amount of delay is such that sound waves emanating from each of the speakers reaches the surround left location at the same time, thereby interfering constructively to produce a resultant sound wave having a peak spatial amplitude at the surround left location. When this wave reflects back to the listener, the listener perceives that the sound originated from the surround left location. [A][H] The SE6 is a 3.0-channel speaker with five drivers and four passive radiators. LG doesn't specify the driver size, but there are four woofers and a single tweeter. The two outer woofers are angled slightly to the left and right, and the two center woofers and tweeter fire straight ahead. The soundbar supports Dolby Atmos and DTS:X spatial audio, though with no upward-firing drivers or rear satellites it relies almost entirely on horizontal acoustic reflection to provide any surround effect. [3]
wherein the means for applying a time varying audio drive voltage includes a class D amplifier.	The means for applying a time varying audio drive voltage includes a class D amplifier. For example, the speakers of the Éclair SE6 are driven by class D audio amplifier. **AMPLIFIER/SPEAKERS** |			
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Total Output Power	100W	Sound System	3.0ch
Output Power - Front	20W x 2	Output Power - Centre	20W x 3
Amplifier Type	Class-D			 [4]

Accused Product List

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LG S90QY, LG S95QR, LG S75Q, LG S75QR, LG S400Q, LG S65Q,
LG Sound Bar C SC9, LG Sound Bar SQC2, LG Sound Bar SQC1
LG Éclair SE6, LG Éclair QP5
LG 3.1.3 ch High Res Audio Sound Bar, LG 5.1.3 ch High Res Audio Sound Bar
LG GX
LG SP2, LG SP7Y, LG SP7R, LG SPM2, LG SPM7A, LG SPD7Y, LG SPD7R, LG SP8YA, LG SPQ8-5, LG SP9YA, LG SP11RA
LG SK1
LG SN4A, LG SNC4R, LG SN5Y, LG SN6Y, LG SN10YG
LG SJ2
LG SLM5Y

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